

# SEQUENCE LISTING

<110> Ye, Rick  
Bedzyk, Laura  
Wang, Tao

<120> NATURAL PROMOTERS FOR GENE EXPRESSION IN *BACILLUS* SPECIES

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<212> DNA  
<213> Bacillus subtilis

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<213> Bacillus subtilis

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<213> *Bacillus subtilis*

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<213> *Bacillus subtilis*

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 <213> Bacillus subtilis

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 <213> Bacillus subtilis

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<210> 13  
<211> 414  
<212> DNA  
<213> Bacillus subtilis

<400> 13  
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gcttttaata ttgaagaaaa ggaaaattat aacactgaat ttttagataa atataatttg 300  
aataaaaactc caacgattct ctattacaaa gatggcaaag aaaaagatcg gtttagagggc 360  
tatagaagtg caagccaaat agaaaagtgc tttgataaaa atggtgatag ataa 414

<210> 14  
<211> 1269  
<212> DNA  
<213> Bacillus subtilis

<400> 14  
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attcaatctt tgggtgcagg ttatgaaaaa tcagatactc ctacaataac atgcgggtatt 180  
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gaaaattggg aaagagttaa agaaatatca ggggaaatta aaaatgataa tatgaaaaaa 1200  
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<210> 15  
<211> 447  
<212> DNA  
<213> Bacillus subtilis

<400> 15  
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acaatggcta gtttattcta cagtgcagatc atgcatttca aaccatgtgt tctatgttgg 120  
tatcaaagaa tatttctata tcctatacct attatcttac taataggctt attaaaaaaa 180  
gatcttaatt cgatatttta tgttgttttc ctttcatcaa ttggattgat tattgcgttt 240  
tatcattata ttatccaact tacacaaagc aaaagtgtcg tatgtgaaat tggaaccaac 300  
agctgcgcaa aaattgaagt agagtatcta ggctttatta cattaccctt aatgagttca 360

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<210> 16  
 <211> 954  
 <212> DNA  
 <213> Bacillus subtilis

<400> 16						
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attgaatacc	ttgataaaac	atatgaagta	actgtaccga	cagacaaaat	tgccattacg	180
ggaagcggtg	aatcaatgga	agacgcgaaa	ttgcttgacg	ttcatccgca	aggcgcaatt	240
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ggagaaaaaa	tgagagccaaa	tattgaaaag	attcttgaaa	tgaagccaga	tggtatcctt	360
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<210> 17  
 <211> 1005  
 <212> DNA  
 <213> Bacillus subtilis

<400> 17						
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tctcttattc	atttcgatcc	gggaaacaca	gaccatcaaa	ttatatggca	ttcccggatt	180
ccaagggtcg	ccggcgctct	gctcataggg	gcagcccttg	ctgtttctgg	agcgcttatg	240
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gcgtttatca	ttacgctttg	catggttctg	ctcccgcaat	catcttcgat	tgaaatgatg	360
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<210> 18  
 <211> 1185  
 <212> DNA  
 <213> Bacillus subtilis

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ccgaatccgc	agtatgaaat	tttgctgttc	gatttaagac	tgccgcgggt	tgcatggct	180
gctattattg	gactcggctt	tggcattgca	ggcgtgttta	tccaggccat	cacgagaaac	240

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ccgctctttg	gattgatagg	cgggctcatc	gcggcgatcc	tgatttacat	atttgcattg	420
cacagaggca	atthagattc	aggaagaatt	attttggtag	ggattgcat	caattcagga	480
ttcagcgccc	tgtctttgtt	tttatcttta	aaaatggacc	cgcaagacta	tcaaattggcc	540
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agacagcggg	ggatttcctg	ctgtttacgt	gcaggatggc	agttctttgt	tccaaaacca	1140
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<210> 19

<211> 477

<212> DNA

<213> *Bacillus subtilis*

<400> 19

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atggatgct	cttgttttaac	ctcctatgat	tatgtactga	ttggcaccta	tacatggggg	180
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aatggtttaa	aaacagcctg	cttcgggtct	ggcgattatt	cttatccaaa	gttttgcgaa	300
gcggtgaatt	tgttcaatgt	catgctgcaa	gaggcgggag	ctgctgttta	ccaggaaaca	360
ctaaaaattg	aattagcgcc	tgaaacagat	gaagatgtgg	aaagctgccg	agcgtttgcg	420
agaggttttc	ttgcatgggc	agattatatg	aacaaggaaa	aatccatgt	ttcataa	477

<210> 20

<211> 894

<212> DNA

<213> *Bacillus subtilis*

<400> 20

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aagggaaacag	tcattcgttc	ggctgatgaa	gggaaaacct	ggacgatgtc	gagctttccg	240
acaaatgcaa	cagtgtgggc	gattaccggc	agaaacaacg	ggtttgtctg	cgcccacggg	300
aagcattgta	tttatgtatc	ggatgatttt	ggtgtctcat	ggcgcgtagc	caaacctttt	360
gccgaatttc	ataatcccc	tgttatccgg	tcgttatgcc	ttcacggggg	caatctcttt	420
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aatggttttt	cgagaattta	ccaggttgat	ctcgaagccc	ggcgtttaa	atggttcgat	780
accattaagg	gacatggatg	gagagtggcc	aatcagaaag	agaatttctt	ttgcgcaggc	840
ttgtatgaat	gtaaatttgt	ccagccgtac	gaagtttcag	caatgattca	ttag	894

<210> 21

<211> 537

<212> DNA

<213> *Bacillus subtilis*



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tcggtaaaaa	tcgaaaataa	tccagaaggt	gaagaagagg	aagaattaat	aaacttcggg			420
agacaattcg	caaagaaaaa	gcgggtgcgc	tgtctgatca	ctcactggga	actgctaaaa			480
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<210> 22

<211> 786

<212> DNA

<213> Bacillus subtilis

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ccgctcaaaa	aactagccaa	gccttcggat	attgcggatg	cgggtgctctt	tttggtttct			720
ggccaggcag	ggcatattac	gatgcataat	ttatgcgtag	atggcggggc	gaccttaggc			780
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<210> 23

<211> 939

<212> DNA

<213> Bacillus subtilis

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tattttgttg	atgctttcac	agcgggagcg	tctccggtaa	cagagctttc	agcgaatata			180
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actttcgtgg	aattggctga	acgccaacg	atcgaagaat	ggcagaaatt	gctcacaact			900
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<210> 24

<211> 1197

<212> DNA

<213> Bacillus subtilis

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<210> 25  
<211> 1488  
<212> DNA  
<213> *Bacillus subtilis*

<400> 25  
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<210> 26  
<211> 1146  
<212> DNA  
<213> *Bacillus subtilis*

<400> 26  
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gatcaaatgg aagaagatca agaccttcac ttgtactatt cactgatgga gtttcggcac 180  
aacctaattgc ttgagtacct tgaaccgtta gaaaaaatga ggattgagga acagccgaga 240  
ctgtctgatac tgctgcttga gattgataaa aaacaggctc gtttaactgg tctgcttgag 300  
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gctgagtttt tctttaagat gtctgaatct tattactata tgaaacaaac gtatttttca 480  
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gccatctcac attttcaaaa agcttattct atggcagaag ctgaaaagca gcccgaatta 660  
atggggagaa ctttgtacaa tatcgggctt tgtaaaaaca gccaaagcca atatgaggat 720  
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ttacctcaag cgtatttttt aattacacag atccattata aattaggaaa aatagataaa 840  
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ttatcagagt ttgaattttt gaaatcttta tacttatcag gcccgatga agaagcaatt 960  
caaggatttt ttgattttct cgaaagtaaa atgttgatg ctgatcttga agatttcgct 1020  
attgatgtgg caaaatatta tcatgaacgt aaaaattttc aaaaagcttc tgcttatttt 1080  
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gtctaa 1146

<210> 27  
<211> 1098  
<212> DNA  
<213> *Bacillus subtilis*

<400> 27  
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gacatggaag aggatcagga ggtgcttgcc tactttctct tattggaact gcgccacaag 180  
gttttgcttc acgaggcgag aggcagggc tttcagcatg aggagccttc tcatatgaat 240  
gctacgtctg acatgctgaa atattacttt tttctgtttg aaggcatgta tgaggcctat 300  
aaaaataatt atgacattgc cattgggctg tataaagatg cagagcagta tctcgacaac 360  
attcccgatc cgattgaaaa agccgaattt cacctgaagg tcggtaagct ctattataag 420  
ctgggacaaa atattgtgtc cctcaatcat acacggcaag cagtcaaaac attcagagaa 480  
gagacagatt ataaaaagaa gctggcttca gccctgatta ccatgtcagg caattttaca 540  
gagatgagcc agtttgaaga agctgaggct tatttggacg aagcaattcg gatcacgagt 600  
gaattagagg atcatttttt tgaagcccag cttttgcata acttcggcct tctacatgcg 660  
caaagcggca aatcagaaga agcggtttct aaattagagg aggccttaca gaacgatgag 720  
tatgcccgtc ccgcctatta ttatcattct gcctacttgc tgatacgaga gctgtttaag 780  
atcaaaaaga aagaacaggc cttatcttat taccaagacg tgaaggaaaa attgactgct 840  
gagccgaata gaatatgtga ggcaaaaata gacattttat atgccattta tgcagaaggg 900  
ggtcatgctg aaacgtttca cttatgcaaa caacatatgg atgacttgtt gtccgagaaa 960  
gagtatgaca gtgtaagaga actttccatt ttggctggcg aacggatatag ggaacttgag 1020  
ctttacaag aagctgccca ctttttttat gaagcattac agattgaaga actgattaaa 1080  
cgaacggagg ttatataa 1098

<210> 28  
<211> 1296  
<212> DNA  
<213> *Bacillus subtilis*

<400> 28  
ttgagtcaag ccataccgtc ttgcgctggt ggtgttaaga ttaatgaatg gtataaaatg 60  
attcgccagt tcagtgttcc ggatgctgag attctgaaag cggagggttg gcaggacatt 120  
cagcagatgg aagaagatca ggatttactg atctattatt ctctgatgtg ttttcggcac 180  
cagctgatgc ttgattattt ggagccggga aaaacatacg ggaatcgccc tacagtgaca 240  
gagcttcttg aaacgatcga gacccctcag aaaaaactca caggtctttt gaaatactac 300  
tctttgtttt tccgcgccat gtatgaattt gacaaaaaag aatatgtgga agcgatcgga 360

tattatcgcg	aggcgagaa	agaactgccg	tttgtgtcag	atgatattga	gaaagcggaa	420
ttccatttta	aagtggcaga	agcgtattat	cacatgaagc	aaacccatgt	gtcgatgtat	480
catattcttc	aagccttgga	catttatcaa	aaccatcctc	tatacagcat	tagaacgata	540
caaagcttgt	ttgtgatcgc	cggcaactat	gatgatttca	aacattatga	taaagcgctc	600
ccgcatttag	aggcggcgct	ggaattggca	atggacattc	aaaatgacag	gtttatcgcc	660
atttctctat	tgaacattgc	aaacagctat	gacagatcag	gagacgatca	gatggctgta	720
gaacatttcc	aaaaagcggc	gaaagtaagc	agagagaaaag	tgcctgatct	gcttccgaaa	780
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ttaagctatt	tcgaaaaaaa	gaacctgcac	gcttacattg	aagcatgtgc	ccggagtgct	1020
gccgctgttt	ttgaaagcag	ctgtcacttt	gaacaagcag	ctgcgtttta	tcggaaagtg	1080
ctgaaagccc	aagaagatat	tctaaaaggg	agagtgttta	tatgcctatt	aagaaaaaaa	1140
gtgatgatgt	gtctggctgt	tactctagtt	ttcgggaagca	tgtcgtttcc	aaccctgaca	1200
aactccggtg	gatttaagga	atcgacagat	cgaaatacga	cgtatatcga	tcattcccct	1260
tacaaactta	gtgatcagaa	gaaagccctt	agctag			1296

<210> 29

<211> 1116

<212> DNA

<213> Bacillus subtilis

<400> 29

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aaaaaacaaa	aggttgatga	atcaataaaa	tattattcag	agataaagaa	actttttgat	120
gaaatggaag	aagatcaaga	agttcttgcg	tattatagtc	tattagaaga	aagacataaa	180
atgttgctgc	attcttcacg	aggagagcct	ttacaaaagc	acacctatct	tactgaagac	240
aatcaaaact	tcataacaaa	aacaaatgat	aaattagaat	acaactttta	tttatttgaa	300
gcaatgtacg	aggcatacaa	caaaaactat	gatcgagcaa	ttaacctata	tggattagct	360
gagaaaaagc	ttgcagaaat	tccagatgaa	attgaagcag	ctgaatttta	ctctaaagtc	420
tcttacttat	atactcttgt	taaacaaagc	attgtggcac	aacattatat	aaaaaatgca	480
atttcaatat	ataagcgaca	ccctgattat	aaatgcaaac	tagctacatc	aacaatgatt	540
gcagctgcaa	actatgctga	tatgaaacga	tttgaggaag	cagaacaata	ttacttagaa	600
gcaattgata	ttgcaaaaaga	aacaaaagat	gaatttttaa	aagctcaatt	atttcacaat	660
cttagtatcg	tttattctga	ttggaacaaa	cctgataaat	gcattgaatc	tcttgaaaaa	720
gcaataggaa	atgaatcttg	gttacattcg	atttattata	taaattcttt	attctgatg	780
attaagaac	tcttttaaat	tgacgaaaaa	atgaaagcca	ttaattttta	caataaagca	840
caggaaagac	tcatattaat	ggagaataaa	gtatacgaag	ccaaaatcag	catcctgtat	900
aacctttatt	gtgggggaatt	aaaaaataat	ttcaataatt	gtattagtaa	tattgagttt	960
ttaaaacagc	aaaatgaact	tgaagtgta	gatgaattgt	cctacatagc	tgcaaaaagg	1020
tttgaatcaa	taggtgcttt	tgaagaagca	acgagctttt	tcaatgcgaa	aatttgaggct	1080
gaacagaaaa	tgaatcaggt	ggagggaatc	ttatga			1116

<210> 30

<211> 1089

<212> DNA

<213> Bacillus subtilis

<400> 30

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ttcggagggt	gggagcttcc	tgttcaattt	tcttctataa	aaaaagaaca	cgaggctgtc	120
cgaactgcag	ccggttttgt	tgatgtatct	catatgggag	aagtcgaagt	gtcagggaac	180
gacagtctgt	cttttttgca	aagattgatg	acaaatgatg	tttccgcgtt	aacgccaggc	240
cgtgtcfaat	atacagcgat	gtgttaccgc	gatggcggaa	ccgtcgatga	tttgcttatc	300
tatcaaaaag	gagagaaccg	ctatctgctt	gtcattaatg	cttctaatat	agataaagac	360
ttggcttgga	tgaagaaca	tgcagcaggt	gatgtgcaga	ttgacaatca	gtcagatcaa	420
atcgcgctct	tggctgtaca	gggaccgaaa	gcagaagcga	tcttaaaaaa	tctgacagat	480
gcggatgtgt	ctgcattaaa	gccgtttgcg	tttattgatg	aagccgatat	cagcggccgc	540
aaagcactta	tttcacgcac	tggctatacg	ggagaagacg	ggtatgaaat	ttactgccgc	600
agtgatgatg	ctatgcatat	ttggaaaaaa	atcatcgatg	caggggatgc	atacggattg	660

attccatgcg	gtctcgggtgc	acgtgataca	ctccgggtttg	aagcgaacgt	cccgtctctac	720
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gcgaagcgca	aacttgctcg	tctcgaaatg	attgaaaaag	ggataccgcg	gcacggatat	900
gaggttttcc	aaaatggcaa	gtctgtcggg	aaggtgacaa	ccggcacgca	gtcacgcaca	960
ttaggaaaaa	acgtcggcct	tgccttaatt	gattcggaaa	cgagtgagat	cgggactgtt	1020
gtagatgtag	agatacgcaa	aaaattagtg	aaagcaaagg	ttgtcaaaac	accatttttat	1080
aaacgctaa						1089

<210> 31

<211> 1347

<212> DNA

<213> Bacillus subtilis

<400> 31

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ggcgtaagca	gcatcgatga	tttattttgct	gatataccgg	aaaacgtcaa	atataaaaaa	120
gagcatcaaa	tcaaaaaagc	gaaatcagag	acagaattaa	caagagaact	gacaaagctg	180
gcctctaaaa	atcgtgatac	cgtacaatac	gcttctttct	taggagcggg	tgtatatgac	240
cactatcagc	ctgtcattgt	ggatcatgtc	atttcgcgct	ctgagtttta	taccgcatat	300
acgccttata	agccagagat	ttcacaagga	gagctccagg	ctatttttga	attccaaacg	360
atgatctgtg	aactgacagg	catggatata	gccaaactcct	cgatgtatga	cggcggaaca	420
gccttggcag	aagcagcaat	gcttgcttca	ggccacacga	aaaagaaaaa	aattgtttgtg	480
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attgatgttg	ttgaagtacc	cgctgcggat	ggcgttacgg	atcttgatgc	attgcgccaa	600
accgttttgc	agaacacagc	cgcagtgatc	gttcagtacc	cgaatttttt	cggcaggatc	660
gagccgctaa	aggatattga	gcctatcgct	catcaaggga	aatccatggt	tattgttttca	720
gccaaaccgc	tgccgctagg	tcttctcact	ccgccgggca	agtttcagtc	tgatatcgtc	780
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gacgaaaacg	gaaaaagagg	ctttgtgctt	accctgcaag	ccaggaggca	gcatatccgc	960
cgggataaag	caacatcaaa	tatatgctcg	aaccaagctt	taaatgcgct	ggcagcatca	1020
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aaagccaact	atgcaaagca	agaagcaaaa	aaagcaggcc	ttactgttat	gtttgacggg	1140
ccgatgttta	atgaattttg	catcaaaact	gatgagccgg	tgagagctgt	gaacaagcgt	1200
ttgctggcaa	aaggcatgat	tggcggatat	gatcttgggt	tgacgtatcc	agagctggac	1260
tgccatatgc	tgattgctgt	aacagagctg	agaacaaaa	aagaaattga	cgcactcatt	1320
caggaattgg	gggatcgcca	tgagtaa				1347

<210> 32

<211> 705

<212> DNA

<213> Bacillus subtilis

<400> 32

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attctgctca	tcacaatcgg	cgtcaccctt	attatgggtt	ttgtgcaatt	taaggctcatt	120
tcaccgacct	accaggcgct	gacacagggt	ctggttcatg	aatcagacgg	tgaagaaaac	180
tcgaatctca	gtgacatcca	gcgaaatctt	cagtatagca	gcacgttcca	atcgattatg	240
aaaagcactg	ccttgatgga	agaagttaag	gcggaattgc	acctatctga	atcggcttcc	300
tcgctgaaag	gaaaagtggg	taccagcagt	gaaaaatgaat	cagaaataat	caacgttgcc	360
gttcaggatc	acgatccggc	gaaagcagct	gagattgcga	acacgttagt	gaacaagttt	420
gaaaaagaag	tagatgaaag	aatgaatgta	caaggcgta	atatattatc	agaggcgaag	480
gcttcggaaa	gcccagtgat	caagccggcc	aggctgcgaa	atatggtcat	ggcttttggc	540
gctgtgttca	tgggctggcat	tacactggca	tttttctcgc	attttctcga	tgatacatgc	600
aaaagcgcac	ggcagctcag	cgagagaacc	ggattgccat	gcttaggctc	cgttctctgat	660
gtccacaaa	ggcggaatcg	cgggataaaa	catttcgggg	agtga		705

<210> 33

<211> 684

<212> DNA  
 <213> Bacillus subtilis

<400> 33  
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 cagaccaact tgcgatctat cctcgtcacc tcctctgtgc ctggtgaagg taaatcgttc 180  
 agtgcagcga atcttgccgc tgtctttgcg cagcagcagg aaaagaaagt actgctgggtg 240  
 gatgccgatt taagaaagcc gaccatcaat cagacgtttc aggttgataa tgtaaccggg 300  
 ctgacaaatg tgctggctcg caatgcttca ctcatgaga cgggtgcaaaa gacgccgatc 360  
 gataacttat atgtactgac aagcgggccc accccgccaa acccggcaga actgttgtct 420  
 tcaaaagcaa tgggagatct aatatctgag atctatgaac aattcagcct cgtcatcttt 480  
 gattccccct ctcttttggc tgttgagat gctcagattc tagcaaatca gacagacggc 540  
 agcgtgctcg tcgttttaag cggaaaaaca aaaaccgata ccgttctgaa agcaaaagat 600  
 gcaactggaac aatccaatgc gaagctgtta ggcgctcttt taaacaaaaa gaaaatgaaa 660  
 aaatcggaac actattccta ctag 684

<210> 34  
 <211> 1797  
 <212> DNA  
 <213> Bacillus subtilis

<400> 34  
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 ttaaaagatt cctatcaatt ttatgactcc ggagcattac tgcttaccgc tgtcagcttg 120  
 ctctcagct atcatgtgtg tgctttcctg ttcaatcagt ataaacagggt gtggacatac 180  
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 ggcgtcattc agtatgctgt gtatcacacg atgttcttcc gtctgttaac cgcgtgctgg 300  
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 actctgatgg tcaggcagct gctttcgaaa gatgaacctg atatcatacc tgtcgttttt 480  
 attgatgacg accaaacgaa gcataaatta gaaattatgg ggctgcccgt aatcggcgga 540  
 aaagaaagta tcatgcctgc ggtgcaaaag ctcaaaatta attatattat tattgccatt 600  
 ccttcaactcc gcacccatga gcttcagggtg ttatataaag aatgtgtgcg aaccggagta 660  
 agcattaaaa ttatgcctca ttttgatgaa atgctgcttg gcacacgaac tgccggacaa 720  
 atcagagatg taaaagctga ggacttgctc ggagaaagc cggttaaccct cgacactagc 780  
 gaaatttcga accgcatcaa aggaaaaaca gttctcgtca cgggagcggg cggatcaatc 840  
 ggctcggaat tctgccgtca gatcagcgcg tttcagccta aggaaatcat tctgctcggc 900  
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 aaaaaatacg agccgcatgt tgtctatcat gcagctgcc ataagcatgt gcctttaatg 1080  
 gaacacaatc cagaagaggc ggtcaaaaac aatattatcg gaacaaaaaa tgtcgcggaa 1140  
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 ccagccaacg taatgggggc gacaaaacga ttcgcagaga tgattattat gaatcttggg 1260  
 aaagtcagca gaaccaaatt tgttgctgtt cgcttcggca atgtactcg gagccgcggc 1320  
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 cgggcaatga cccgctattt catgacgatt cccgaggcat caaggcttgt gattcaggct 1440  
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 gaattcacag gcattcgtcc gggcgaaaaa atgtatgaag aattgctgaa caaaaatgaa 1620  
 gtccatgctg aacaaatctt tccaaaaatt cacatcggtg aagcgggtga cggcgattgg 1680  
 ccggtgctga tgcgctttat cgaggatttt catgagctgc cggaagccga cctgagagcg 1740  
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<210> 35  
 <211> 1146  
 <212> DNA  
 <213> Bacillus subtilis

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accaagctgc cgtatgtgga tgagaaattc tccatcccga ttcgcaggtc accttttgac 180  
cctcagaacc tggccgttta taggcagctg aagaaagtga ttgacactta tgaatacgac 240  
attgtccatt gccatacacc ggtcggcggc gttctcgcca gactggcggc gaggcaggca 300  
cggcgggcacg gaacaaagggt gctgtacaca gcgcacggat ttcacttctg caaagggggca 360  
ccgatgaaaa attggcttct ttactatccg gttgagaaat ggctttcagc atatacagac 420  
tgcctgatta cgattaatga agaggattac atacgggcga aaggacttca aaggccgggc 480  
ggaaggacgc agaaaattca cggcattggc gtcaataccg agcgtttccg gcctgtcagt 540  
ccgatagagc agcaaagact cagagaaaaag cacgggttcc gtgaagatga ttttatattg 600  
gtttatccgg ctgagctcaa tctgaacaaa aaccagaagc agttaattga agccgcagcc 660  
ttgctaaaaag aaaaaattcc ctactccgc cttgtgtttg ccggggaagg ggcaatggaa 720  
catacgtatc aaacgttagc tgaaaagctt ggtgcctccg cccatgtctg tttttacggc 780  
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agagaaggcc tcggtatgaa tgtgcttgag ggaatggcgg cagaacaacc ggcgatcgcc 900  
acagataatc gcgggcatcg ggaaatcatc cgcgacggag aaaacggttt tctgatcaaa 960  
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tgccgaaagc tgggacagga aggcgaaaaa acagccttgc gcttctcgga ggcgcgaacg 1080  
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gtatga 1146

<210> 36  
<211> 837  
<212> DNA  
<213> *Bacillus subtilis*

<400> 36  
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gatgatgcgt caacagacgg cacgctccgt atcgcgagc agtatgccgc tcattacagc 180  
gaccgcatca aactgattca aaacaaaaca aataagcggc ttgccgcac attaaatcat 240  
tgtctttcgc atgcgacagg cgattatatac gaacgtcagg acggagatga cctttcgttt 300  
ccgcgcgcgtc tggaaaagca ggtcgcggtt ttagaaaagc accgacacta tcagggtggtt 360  
ggcacgggca tgcttgtggt tgatgaattt ggcgtaagag gcgcccgcac tctgccttct 420  
gttccggagc cgggcatcat ggcaaaaagg actccatttt gccacggcac gattatgatg 480  
agagcgagtg cctaccgcac gctgaaaaggc taccggtcgg tgcggcggac gagacgaatg 540  
gaagatatgt atttgtggct tcgctttttt gaagagggct tcaggggcta taatcttcag 600  
gaagccttgt ataaagttag ggaagacagc gatgcattca aacggcgggc atttacgtat 660  
tcaatcgaca atgccattct tgtctatcag gcgtgcagac gcttgaagct tcctttatct 720  
gattacatat atatcgcaaa accgttaatt cgcgccctta tgccctgcagc tgtgatgaat 780  
cgctaccata aaaaaagagt gatgaaccaa aaggaagggc ttgtcaagca tgaatag 837

<210> 37  
<211> 1155  
<212> DNA  
<213> *Bacillus subtilis*

<400> 37  
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ttaacgtatc gaaatgatcc gtgcgcttat gatgaagaga ttttatcttt aggcgggcgg 180  
cttttttatg tcccagcat tgggcaaaagc aatcccctta catttgtgag gaatttgaga 240  
aacgcgataa aagaaaatgg gccgttcagc gccgttcagc cgacacgga ttccaaacg 300  
ggtttttatc cccttgccgc aaggctcgcc ggagtgcggc tcagggtatg ccactccac 360  
aatacgtctt ggaagaccgg cttcaactgg aaggatcgat tgcagctgct cgtgttcagg 420  
cggctcattt tggcaaatgc gacagcgctg tgtgcctgcg gagaggatgc gggcagggtt 480  
ttatttggac agtccaatat ggagcgggag cgtgttcacc ttcttcctaa cgggattgac 540  
cttgagttgt tcgccccaaa tgggcaggcg gctgatgaag aaaaagcagc acgcggcatt 600  
gcagccgacc ggctcatcat tggccatgtg gcccggtttc atgaagtga aaaccacgcg 660

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tcagacgtcc	tcttttttagg	cacggaagaa	cggatccatg	aactgatgcg	aacattcgat	840
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tacgatgcac	agcaaaatgt	aggagcgcgtg	ctgaatgtat	acaacatcag	cacggaaaag	1140
gaccataacc	gatga					1155

<210> 38  
 <211> 1104  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 38						
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attccgctcg	cttcacttgt	gctcgtgtca	ggctctcgc	atcgagtcgg	cacggatttt	180
cagacgtaca	cgctgttgta	cgaattggcg	ggcgattatc	aaaatgtgtg	gcagatattc	240
ggtttcggca	cagcgaaaac	agcgacagat	ccgggggttta	ccgcactcct	ttggctgatg	300
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gttttgtttt	gggcgatccg	ttatatcatt	agcggaact	ggaagcgata	tttcttgatt	540
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gtcagaagaa	aagcctgggc	accggcgata	ttcggcctat	ccgctttatt	tctcggcatg	660
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gtcccttatt	tcgtcaggat	atttgatgaa	aaatcgaacg	ctcttatcta	tatcgctatc	1020
gttggttggt	attttcttta	cagttatttg	cttatgccgg	tcgattcatt	ggttctgcct	1080
tacagaacga	ttttttcccg	gtaa				1104

<210> 39  
 <211> 1077  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 39						
atgtcgttac	aatcgttgaa	aatcaatttt	gcagaatggc	tgctgctaaa	ggtcaaatac	60
ccgtcccaat	attggctggg	agcggcagat	caaccggtaa	aggccgcagc	acatcagaaa	120
aaaatcatac	tgaccctgct	gccgtcccat	gacaatttgg	gagatcacgc	aattgcttat	180
gccagcaagg	catttcttga	gcaagaatac	ccggactttg	acatcgtcga	ggtcgatatg	240
aaggacattt	acaaatcagc	aaaaagcctg	atccgctcgc	gccatccgga	ggatatggtc	300
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ttcatcatta	aaacattcca	tgactatcgg	gttgctccagc	ttccggcaac	ggctcatttt	420
tctgacacga	aaaaagggcg	caaagagctg	aaacggggcac	agaaaattta	taatgcgcac	480
cccggcctat	tgctgatggc	gcgggatgaa	acaacgtatc	aatttatgaa	acagcatttt	540
caagaaaaaa	caattttgaa	gcagccggac	atgggtgctg	atttagacag	aagcaaggct	600
ccgcagaaac	gcgaaggggt	ttatatgtgt	ttgcgcgagg	atcaggaaa	cgtgcttcag	660
gaggagcaga	ggaaccgggt	caaggctcgc	ctatgtgagg	aattcggcga	gatcaaatcc	720
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gagcgcgtaa	cagccgcagt	caatgagctt	taaacaaaag	aaacatcccc	tgcaggcttt	1020
ccgagagatg	tgtattttta	aggtctgcgt	gacaaaatca	gcggtgaagc	gcaatga	1077



<210> 40  
 <211> 1035  
 <212> DNA  
 <213> Bacillus subtilis

<400> 40  
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 tgcattgatt ctttgcttcg tcaaacgctt tctgatattg aaatcatcct cgtgaatgac 120  
 ggaacaccgg atcgttcagg cgaaattgca gaggactatg caaaacggga tgcgagaatc 180  
 cgggtcattc atcaggcaaa cggcgggctt agttcagcgc gaaatacggg aataaaggcc 240  
 gcgcggggca cttacatcgg cttttagac ggagacgatt atgtatcatc cgccatgttc 300  
 cagaggctga ctgaagaagc ggagcaaaat cagcttgaca tcgtcggatg cggtttttac 360  
 aagcagtcac cggacaggcg gacatatgtg ccgccgcagc ttgaggcaaa ccgcgtgctg 420  
 acgaaaccag aaatgactga acagcttaaa catgctcacg aaacgagatt tatctggtat 480  
 gtatggcggt atctttaccg tcgtgagctt tttgaaaggg cgaatctgct gtttgatgaa 540  
 gacatccgtt ttgctgaaga ctctcccttt aatttgtccg cttttcgcga agcggagcgg 600  
 gtgaaaatgc ttgatgaagg attgtacatt tatcgtgaaa acccgaaacag cctgacagaa 660  
 atcccttata agccggcgat ggatgaacat cttcaaaaac aatatacaggc taaaatcgca 720  
 ttctacaatc actacggctt agcaggcgca tgtaaagaag atttgaatgt gtacatttgc 780  
 aggcaccagc ttccgatgct tttggcaaat gcctgtgctt ctccgaattc gccgaaagac 840  
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 acaccgtttc agcatgagaa attattaaga ggagagcgtt tgggtattagc actgtgtaaa 960  
 tggcggctca cttttctcat caagctgttt ttcgagcagc gggggacaat gaaaggcagt 1020  
 gcgaagcagg catga 1035

<210> 41  
 <211> 1002  
 <212> DNA  
 <213> Bacillus subtilis

<400> 41  
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 caaaagatgc tggagatcag gggctttgaa gacaaagtgc atgaactgtt cgcccaggga 120  
 gtgcttcccc gattcgttca tttatatgcc ggtgaggaag ccgtggctgt aggggtgtgc 180  
 gctcatttac atgatggcga cagcattaca agcaccaca ggggacatgg acattgtatc 240  
 gccaaaggct gtgacctgga cggcatgatg gcggaaattt tcgggaaagc gaccggattg 300  
 tgcaaaaggca agggcggttc tatgcacatt gcggatcttg ataaaggcat gttaggcgca 360  
 aatggaatcg tcggggggcg ctttacgctc gcatgcggat cagcgcctac ggctaaatat 420  
 aaacagacta aaaatgtaag cgtttgcttt ttcggggacg gggcaaataa ccaaggtagc 480  
 ttccacgaag ggctgaattt agcggctgta tggaaacctc ctgtcgtatt tgttgctgaa 540  
 aacaacggct atggcggaagc taccctattt gagtacgcat cagcctgtga ttcaatcgcc 600  
 gatcggggcg ctgcttataa catgccgggg gttacagttg acggcaaaga tatttttagca 660  
 gtttaccagg cagccgagga agcgatagaa agagcaagaa acggcggcgg cccgtctttg 720  
 attgaatgta tgacctacag aaactacggc catttcgaag gagatgcca aacctataaa 780  
 acgaaggatg aaagagttga gcaccttgaa gaaaaagatg ccattcaagg ttttaaaaac 840  
 taccttttaa aagaaacaga tgctaataag ctgtcagaca ttgaacagcg tgtcagcgaa 900  
 tcgattgaaa aagccgtctc gttcagcgaa gacagcccat atccaaaaga ttcggagctg 960  
 ctgacagatg tgtatgtgtc atatgaaaaa ggaggaatgt aa 1002

<210> 42  
 <211> 1029  
 <212> DNA  
 <213> Bacillus subtilis

<400> 42  
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 aaagacgaaa atgtgctttt gatcgggtgag gatgtcgccg ggggagcggc ggtcgatcat 120  
 ttgcaggatg atgaagcatg gggcgggtgta ttaggggtca caaagggact cgtacaggaa 180  
 ttcgggcgta caagagtgtc ggacactccg atttctgagg caggctatat gggagcggct 240

atggctgctg	catcaaccgg	tttgagaccg	attgccgagc	tgatgtttta	cgatttttatt	300
ggcacgtgct	ttgatcaggt	gatcaaccac	ggggcgaaat	tccgttatat	gttcggcgga	360
aaagcgcaag	tgccgattac	cgtccgcacc	acatacgag	cagggttccg	ggccgctgcc	420
cagcattcac	aatcgctgta	tggccttttc	acgagcatcc	ctggactgaa	gacagttggt	480
ccatccaatc	cgtatgatgc	caaaggtctt	ttgcttgacg	caatagaaga	taatgatccg	540
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tatacaattc	ccctcggaac	agcggatata	aaacgcgaag	gcaatgatgt	tacgctcttt	660
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attaaacgga	ttacagcgcc	gcatacaccc	gttccgtttt	caccagtgtc	tgaagatcaa	960
tatttgccga	caccagataa	aattgtcagc	gtcacgcttg	aattgcttgg	cgagccggca	1020
ttgaattaa						1029

<210> 43

<211> 1197

<212> DNA

<213> *Bacillus subtilis*

<400> 43

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atatggaata	aaaaagtagg	cgacccgggt	gaaaagggag	aaagcattgc	cagcattcaa	120
tcggagaaaa	ttgaaatgga	gatcgaagcg	cctgaaaaag	gaacgctgat	cgatatcaaa	180
gtgaaagagg	gagaagaggt	tccgcccggc	acagctatct	gctatatcgg	ggacgccaat	240
gagtcgggtc	aggaagaggc	gggggcccct	gttgctgaag	acaatatgcc	gcaagccgtc	300
cagcccgctc	aacaagaaaa	caaaccgcga	gcctccaaaa	aagatcgaat	gaaaatatct	360
ccagtcgcca	ggaaaatagc	agaaaaagca	ggattagacc	taaaacaact	gaaagggaact	420
ggaccaggcg	gacgaatcgt	gaaggatgac	gtaacaaagg	ctcttgctga	acagaaaaaa	480
gatcaagcaa	agcctgtttc	ggagcagaaa	gcgcaggaaa	tcccggtgac	aggcatgaga	540
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gcacgcgagg	gacgtgcggg	aagcgaagaa	ctgcaaggat	ctactttctc	cattacaaac	960
cttgggcgct	ttggagttga	gcatttcaca	ccgatactaa	atccgccgga	aacaggcatt	1020
ctcggcatcg	gagcaagcta	tgacacaccg	gtgtatcaag	gggaggagat	cgtcagaagc	1080
acgatcctgc	cactcagcct	gacatttgat	cacagagcgt	gtgacggcgc	ccctgccgct	1140
gcattcctga	aggcgatgaa	aacatatttg	gaagaacccg	cagcattaat	tttatag	1197

<210> 44

<211> 1377

<212> DNA

<213> *Bacillus subtilis*

<400> 44

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gaaggctgca	tcccgacaaa	gtctttgtta	gaaagcgcaa	acgttcttga	taaaatcaag	180
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cttgagggaag	acggtgtcga	agtgcatact	tcatccagat	tagggcgggt	ggatcaaacg	720

gccaaaacgg	caatatggaa	aagcgggtcag	cgagagttta	aaacgaaggc	cgattatgtg	780
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gattttttctc	caaagggcat	tccgggtgaat	gggcacatgc	agacgaacgt	gcctcatatt	900
tacgcgtgcg	gagatgctat	agggggcatt	cagctcgcg	atgccgcttt	ccatgagggc	960
atcatcgctg	cttctcatgc	ttccggaagg	gatgtcaaaa	tcaatgagaa	acatgtgccg	1020
cgctgcatct	atacgtcccc	ggaaatcgcg	tgtatcgga	tgacagaacg	acaggcaaga	1080
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atgaatggtg	agatgacggc	agatatggcg	gagcatttta	tcgccgccca	tccgacttta	1320
tcggaaacat	tgcatgaggc	gctgttaagc	acgatcggcc	ttgcggtaca	tgcataa	1377

<210> 45  
 <211> 582  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 45						
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gaatatgtaa	aggacttttc	ttgggatatt	attgtgacga	gcccgcgtgaa	aagagcgaaa	180
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gactataata	tcaacagcca	cttatccggc	tttatcaaat	aa		582

<210> 46  
 <211> 1095  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 46						
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gaggatcaag	ttgacgaggt	cattctcgga	aacgctactg	gcagaggcgg	caacctggcc	180
agactgtcag	cccttcaagc	cggactgcct	ttatcggttc	ccggaatgac	aattgacaga	240
cagtgcggct	ccggccttga	agctgtgctg	tatgcctgca	gccttattca	agcgggagcc	300
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gctcgctttt	ctccagatgc	gatcggcgat	ccagacatgg	gcattgcggc	agaatatacg	420
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ggcattccct	tttcaaaaat	caatgtgctg	ggcggcgctt	tagctcttgg	ccatccgtac	960
ggtgcatcag	gtgcagctct	ggtaaccaga	ttgttttatg	aagcgaaaag	acggccagac	1020
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gaagttcttg	catag					1095

<210> 47  
 <211> 1440  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 47  
atgacaatta ctcataccta ttcattctact gccgaaacat cgcccggccg tgtagcgatc 60  
cagactgaat cggagcaaat cacgtaccat gattgggacg ggcttgtctc tcaaaccgca 120  
aattggctgc ggtcacagcc gagcatgccg aatcgtgtgg cgatcctgct cccaaatagt 180  
ctcgcgtttt tacagctggt tgcgggagcc gcagcggctg gatgtacggc cattcccatc 240  
gacacacgct ggagcccggc tgaatgtaag gagcggctgt ccataagcaa tgcggatctt 300  
gtggttactt tagccttttt caaaaacaaa ctgacagata gccagacacc tgttgtattg 360  
ctggataact gtatggcaga tatttctgag gcagccgctg atcccttgcc taccattgat 420  
ccggagcacc ctttttatat gggatttacg tcgggctcga caggaaaacc gaaggccttt 480  
acgcgatctc accgctcatg gatggagagc tttacctgta cagaaacaga tttttcgatt 540  
tcacagatg ataaggttct gattcccggg gcgttaaatgt cctctcactt cctatatggg 600  
gctgtcagca ctttgtttct cggaggaacc gtttgtttgc tgaaaaagtt ttctcctgcc 660  
aaagcgaagg aatggctgtg ccgtgaatcc atcagtgttc tctataccgt accgacgatg 720  
acagacgccc tcgcaaggat tgaggggttt cccgacagtc ccgtcaaaat catttcatcc 780  
ggcgcgagct ggccggcaga atccaagaag aagcttgccg ctgcatggcc tcattctcaag 840  
ctgtacgatt ttacggcac atcagagctt agttttgtga cgttttcttc accggaagac 900  
agcaaacgga agccgcattc agcgggcccgc ctttttcata atgtccggat cgaatccgc 960  
aacgctggag gagaacgctg ccagccagga gaaatcggaa aaatatttgt caaaagcccg 1020  
atgaggtttt ccggctatgt gaacggcagc acaccagatg aatggatgac agtagatgat 1080  
atgggctacg ttgatgaaga gggctttcta tacatatcag gaagagaaaa cgggatgatc 1140  
gtgtacggag gattaaatat tttcccagaa gaaattgaac gtgtgcttct cgctgccca 1200  
gaggttgaag gcgcggctgt cgttggcatt cccgacgagt attggggaga aatcgctgta 1260  
gctgtcattc ttggaaacgc taatgccaga acactgaaaag cctggtgtaa acagaaatta 1320  
gcctcctata aaattccgaa aaaatgggtg tttgcagaca gcttgccgga aacgagcagc 1380  
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<210> 48  
<211> 561  
<212> DNA  
<213> *Bacillus subtilis*

<400> 48  
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gggtgctagt tggcagcag cattctcagg ccaaagcttg ctttcttaag ccagcttgctc 180  
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agtttagccg ctaacaggct gcggaagggt acagtattgc gtctcttttt cactcatatc 360  
gtattcggca tcattctttt ttatctgctt ggtataccgg tacaagcttt tatcatgcat 420  
attgatttgt cacaggccgc cttcatgagc cttgcatatg tgcttggtga tttgataaaa 480  
gcggctgtat ctgcatttct ggcgataaaa atcactcaag cttgtctctt ttctgatacg 540  
atgtttacaa aaggaggatg a 561

<210> 49  
<211> 1299  
<212> DNA  
<213> *Bacillus subtilis*

<400> 49  
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gtcaggttgg gagatgctga gctttatgtg ttagagcagc ttcagccact cattcaagaa 180  
aatatcgtaa atatcgctga tgcgttttat aaaaaccttg accatgaaag ctcatgatg 240  
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caggaaatgt ttgcaggcgt tatcgatgat gaatttattg aaaagcgtaa ccgaatcgcc 360  
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cttttgtcaa tgattgacat ttatgaagcg tccattacaa atcagcaaga actgctaaaa 480  
gccattaaag caacaacaaa aatcttgaac ttagaacagc agcttgtcct tgaagcgttt 540  
caaagcgagt acaaccagac ccgtgatgaa caagaagaaa agaaaaacct tcttcatcag 600

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caagagcttg	tggacaaatc	tgaaggcatt	tctcaagcat	ccaaagccgg	cactgtaaca	720
tccagcactg	ttgaagaaaa	gtcgatcggc	ggaaaaaaag	agctagaagt	ccagcaaaaa	780
cagatgaaca	aaattgacac	aagccttgtc	caaatcgaaa	aagaaatggt	caagctggat	840
gaaatcgcg	agcaaatga	aaaaatcttc	ggcatcgta	caggcatagc	tgaacaaaca	900
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gatctgcaag	cctttcttgg	agggcttcag	gaagtcagcc	gcgccgtttc	ccatgtgggc	1260
gcttccgctg	attcgcttgt	catcctgaca	gaagaataa			1299

<210> 50  
 <211> 1350  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 50						
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atcgactca	tgtcttggga	ccatttggag	gagtttccga	tcagaaagct	gaagctgtat	120
gataatgata	aggagagaca	ggatcgaatt	gcaggcgct	gtgacgtttt	tatcagagaa	180
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gattttgtta	tggcgacat	cagagtaggg	aaatacgcga	tgcgcgcgct	tgatgagcaa	300
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ggtatgcgtt	cgatcggcg	tgtgcttgaa	atattagatt	acatggaaaa	atactcgctt	420
gatgcgtgga	tgtcaatta	ttccaatccg	gcggcaattg	tggctgaagc	tacgagacgc	480
cttagaccga	attctaaaat	tctcaatatc	tgtgatatgc	cggttgggat	cgaagaccgg	540
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aatcatttctg	gctggtggac	atcgattcag	gatcaagagg	gcaacgattt	aatgccgaag	660
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ccgaatcata	cgcggggcgaa	tgaagtcatg	gaagggcgcg	aagcttttat	tttcagccaa	900
tgtgacatga	tcacacgtga	acagtcctcg	gaaaacagcg	aaattaaaaat	cgatgaccac	960
gcacgtgata	tcgttgatct	tgcggggggc	attgcctaca	acacaggtga	aagaatgctg	1020
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gagaaatcgt	tccaaaagct	gtggcaggcg	ctgatcctgt	caaaaacagt	gccgaacgcg	1260
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cttgatcaaa	gcccaccccg	catatcataa				1350

<210> 51  
 <211> 1584  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 51						
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ctcgccgatc	ctgacggttt	ttggtatcag	tgctggtata	tcattgagca	ggggcgctgg	180
actgttttta	accaaagtc	gctcttatc	gccattggca	tcccggttgc	tttggcgaag	240
aaagctcagg	cacgcgcctg	tttgggaagc	cttactgtct	acctgacatt	caactatttt	300
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ggagccatct	ttatttcttc	gattgtcgtc	tttttgcata	atcgctattt	tgataaaaaa	480
ctgcccgaat	ttctcggcat	ctttcaaggc	tcaacatata	tcgtgatgat	ttcttctttt	540
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gaaaagaaaa	aactcgtcgc	agggctgctg	attcctgtca	cactgacagc	gattgtcgcc	960
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cacgccgtgc	ttgccgccac	aatgtcgaca	gttatgtata	tggccggcgt	cgtcggaaat	1080
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cagcaggaaa	caaagctata	ttcgaaaaag	gaatacacag	aacgaaaaaa	caaggatgaa	1320
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ggaaaagaca	acatcactga	agtcacaaac	tgcgccaccc	gcctcagagt	cagtgtcaag	1440
gatgaaacaa	aggttgaacc	cgacagcgta	ttccgcgcgc	ttggcgcaca	cggcggtgtc	1500
aggaacggga	aggcgtttca	ggtaattatc	ggattaagcg	tgccgcagat	gcgggagcgt	1560
gtggaaaaaa	tattgaatca	ataa				1584

<210> 52

<211> 1365

<212> DNA

<213> *Bacillus subtilis*

<400> 52

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ttttctgtca	tattgtttgc	gccgatttgc	gcgttattcg	cggtgctgct	gacagatcca	120
agccatgtgc	ttcctttttt	ttcatcaatt	tttatggaga	agatggcggg	ttttattaag	180
ctgtatttcc	cagtgttttt	gctcggtgct	atttttggaa	aggtcgttga	aatggccggg	240
cttgccgcat	caatcgcgaa	aacaattgtc	cggcttgcgc	gggcaaaaag	agcgatactt	300
gccattgtgc	tgtgtgtgac	tacagcggtg	tcagcctggt	tggtgtcgta		360
tttgcgtgat	atccttttgc	gaaaaacatg	ttccaagaag	caaacatacc	aaaacgcctc	420
atcccggtga	cgattgcttt	aggagctttt	acgtttacga	tggacgcact	tccgggaacg	480
ccgcaaattc	aaaatgtcat	cccagcgtcg	tttttcaaaa	cagacattta	tgccgcccct	540
tggctgggtt	tgatgggcgc	agtgattgtg	ctggcagctg	ggatgctcta	tttggaatca	600
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cctgctcctg	aatcgattga	gtccgcggct	gaaccggaca	aaagcccgat	tccgcacgcc	720
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caggcttaca	atattccgcc	agaggtgatg	catcgggtca	tttcaatggc	atcaggcggg	1260
atggatacac	tgccgcataa	tggcgccggt	atcacgcttt	ctggccgtga	cgggtttgac	1320
ccaccggcaa	tcctatcgcg	atatttttgc	gatcacgctc	attaa		1365

<210> 53

<211> 717

<212> DNA

<213> *Bacillus subtilis*

<400> 53

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ctgatcgcgg	gaggggtttg	gctgtgcggc	atccctgaac	agctcatttt	gtctataaga	120
gatcagggag	taaaggattt	aaccgtttgc	agcaataact	gcggagtcga	tgactggggg	180
cttggtttgc	ttctggctaa	caagcaaatc	aagaaaatga	tcgcttccta	tgctcggtgaa	240
aataaaaatt	ttgagcggca	gttttttaag	ggagagcttg	aggtagagct	tgttccccaa	300
ggaacgctcg	ctgagagaat	tcgtgcaggc	gggtgcaggca	taccgggatt	ttatacggcg	360
acaggcgctg	gcacctccat	agccgagggg	aaagaacata	aaacattcgg	cggccggact	420

tatgtgctgg	agcgaggcat	taccggcgat	gtggcgatcg	tcaaagcgtg	gaaagcggac	480
accatgggca	atgtgatttt	taggaaaacg	gcgagaaatt	tcaatcccat	tgccgccatg	540
gcaggcaaga	tcacgattgc	cgaggcggaa	gaaatcgtgg	aagcaggaga	gctcgatcca	600
gatcacatcc	atacgccggg	aatttacgta	cagcatgtcg	tgcttggcgc	gagccaagaa	660
aaacggattg	aaaaacgaac	agttcagcaa	gcaticgggaa	agggtgaggc	caagtga	717

<210> 54

<211> 651

<212> DNA

<213> *Bacillus subtilis*

<400> 54

gtgaaggaag	cgagaaaacg	aatggtcaaa	cgggctgtac	aagaaatcaa	ggacggcatg	60
aatgtgaatc	tcgggattgg	aatgccgacg	cttgtcgcaa	atgagatacc	cgatggcggt	120
cacgtcatgc	ttcagtcgga	aaacggcttg	ctcggaattg	gcccctatcc	tctggaagga	180
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aaaatggtaa	aagggatggg	cggcgccatg	gatctcgtca	acggggcgaa	acgaatcggt	420
gtcatcatgg	agcacgtcaa	taagcatggt	gaatcaaagg	tgaaaaaac	atgctccctt	480
ccgctgacag	gccagaaagt	cgtacacagg	ctgattacgg	atttggtgt	atttgatttt	540
gtgaacggcc	gcatgacact	gacggagctt	caggatggtg	tcacaattga	agaggtttat	600
gaaaaaacag	aagctgattt	cgctgtaagc	cagtctgtac	tcaattctta	a	651

<210> 55

<211> 774

<212> DNA

<213> *Bacillus subtilis*

<400> 55

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gaaaaagcag	cctccaagct	tgcagaagaa	ggctttgacg	cggcggccat	tccgtatgat	180
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ttggatattc	tggtgaacaa	tgccggtatt	cagcacgtcg	ctccgattga	agagtttccg	300
acagacacct	ttgaacagct	gatcaaggct	atgctgacgg	ctccctttat	tgcaatgaag	360
catgtttttc	cgatcatgaa	aaaacagcag	tttggcagaa	tcattaatat	tgctgtgtt	420
aatggattag	tgggctttgc	agggaaatcc	gcttataata	gcgccaagca	cggcgctcatt	480
ggactcacia	aagtaggggc	gctggaaggc	gcgccccacg	gcataacagt	caatgcgctc	540
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cgactgcttt	ccgtcaagga	aattgcggtg	tatgccgtgt	ttttggcaag	cgagaaggcg	720
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<210> 56

<211> 1788

<212> DNA

<213> *Bacillus subtilis*

<400> 56

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gttatcccag	ccaattcgct	gcgtgatgag	ctggccaaac	ggctcaaggc	atacatgaca	1740
aaggaaatga	catttaccaa	tcgaaagcat	ccggtttatc	cgggtgttaa		1788

<210> 57

<211> 783

<212> DNA

<213> *Bacillus subtilis*

<400> 57

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gatcttgcta	caggccttgc	gattgaacaa	aaagcgtatg	aacaaaccat	cccagacaaa	720
gacaggagag	aagggttcca	ggcctttcaa	gaaaaaagac	gggccgtata	caagggaata	780
taa						783

<210> 58

<211> 900

<212> DNA

<213> *Bacillus subtilis*

<400> 58

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gggctgtcgt	atattgaaat	cacatccttc	gttcacccga	aatggattcc	ggcgcttcga	180
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gtcccgaatc	aaagaggact	ggagaatgca	cttgaaggag	gcattaacga	ggcttgctgt	300
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ctccatatac	tcaaacaaag	aaacaacgac	gcacaaaaag	caaacctcac	aacaagagcc	420
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cgcctttcag	aagctctatt	tgaatttggg	atttctgaac	tgctcgttgg	agatacgatt	540
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gctaatacaa	ttgccctgca	ttttcatgat	acgagaggaa	ccgctctggc	caacatggtc	660
acagcactcc	aaatgggcat	cacgggtgtc	gacggctcgg	caggcgggct	tgggggatgc	720





ggctattata	aagacaaaga	tgcgaccaga	aaagcaatca	atcatgacgg	atggctgttt	1260
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gatatgctca	tcagaggcgg	cgagaacatt	tatccgcggg	aaattgaaga	atTTTTtatac	1380
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<210> 61

<211> 1014

<212> DNA

<213> *Bacillus subtilis*

<400> 61

ttgaaaacga	taacaattgc	agctgaagaa	gcaaaggaac	tcgtttggca	aaagctggac	60
gggtgccgggt	tgaatgaacg	agatgctgaa	aaagtggcag	atgttctcgt	gcacgctgat	120
ttgCGcaatg	tacattcgca	tggcgtgctg	cacacagaac	actatgtgaa	caggctttta	180
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gtgcttgacg	gagacgatgg	tttcggtcat	gtgaattgcg	acatggcgat	ggaccatgca	300
attgacatgg	cgaagaaaaa	aggagtcggc	atggtcacgg	ccgtaaacag	cagccattgc	360
ggagcgctaa	gctattttgt	gcaaaaagcg	gctgacgaaa	agctgacgg	aatggcaatg	420
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acgtttttag	agcagatgga	tgccatgatt	gatgaactgc	agcaatcacc	gccggctgtt	900
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<210> 62

<211> 1020

<212> DNA

<213> *Bacillus subtilis*

<400> 62

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gttctttcaa	aggatgatga	agtgtctcgt	aaagtcaagc	gagtcggcat	ttgcggttca	120
gacatgcaca	tttatcatgg	aacgaatccg	ctcgctaccc	tcccagaggt	catcggacac	180
gaggtaacgg	gacaagtgga	ggcagttggt	gcgaatgtac	agagcctaaa	acccggtgat	240
catgtgggtga	ttgagccgat	ttcttattgc	ggatcgtgct	atgcctgccg	caaagggcgg	300
ccgaatgttt	gcgcgaagct	ttctgtattt	ggcgtacatg	aggacggagg	catgcgggaa	360
tatattgtgc	ttccggaaaag	acagcttcac	gcggtctcaa	aggacttgcc	ttgggaggaa	420
gcagtcattg	ccgagcctta	tacgataggc	gcccaggcag	tgtggagagg	ccaggtggaa	480
aaaggtgata	ccgtcctgat	ccagggagcg	gggcccacg	ggatctgtgt	gttaaaaatg	540
gcaaaactgg	cgggcgctgc	tgtcatgatg	actgacttga	acaacgagcg	gctggcattt	600
gcgaaagaaa	acggcgccga	tgctgttgta	aatgtccaag	cagaacatgt	tgccgagcgg	660
gtccttgaat	ggactgggaa	tgaaggagca	aacgtggtca	ttgatgctgt	ttgcctgccg	720
gagacttttg	cactttcaat	tgaggctgtg	tcaccggcgg	gacatgtggt	tgtgcttgga	780
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accggatccc	gattgcagac	caatcagttt	ccaaaagtgg	tagagctttt	gaatggaggc	900
cggttaatgc	ataacgggct	ggtgacccat	acattttcag	ttgatgacgt	tcacatgca	960
tttcagttta	ttaaggagca	tccagatcag	gtgcggaaaag	ccgtcatcac	gtttgattaa	1020

<210> 63

<211> 1080

<212> DNA  
 <213> Bacillus subtilis

<400> 63  
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 gtgtgggaaa aagaagaaat cagagccgaa actgaatata ttcaatccta tgggtttcat 180  
 gctgaagttg tagaaagcgt gaatgttcac gaagcgatta aacttgggaa cgaagaacgc 240  
 ggccggtata ttgaaaacta caagcaaacg atccgcaacc ttgccggatt tggcgtgaaa 300  
 gtgactgtct ataattttat gccggttttt gattggacac gcacggacat gttccggccg 360  
 ctagaagatg gatcgaccgc tctgtttttt gaaaaggcca aggtggaaaag ccttgatcct 420  
 caagagctga ttccggacggt ggaggaagca tccgacatga cactgccggg gtgggagccc 480  
 gaaaaattgg ctccgatcaa agagcttttt gctgcctaca gaacggtcga tgaagaaaag 540  
 ctatgggaca atttatcatt ctttttgcag gaaattcttc ctgttgctga ggcctatggt 600  
 gttcaaattg ccattcatcc ggatgacccg ccgtggccga ttttcggact gccgcgcatt 660  
 atcacaggag aggcaagcta taagaaactg cgggcgatat cagattcacc gtctaattgt 720  
 atcacccctt gtacagggtt aatgggagcc aatcccgcga acgacatggt ggagatcgct 780  
 aaaacgtatg ccggcatcgc tccattttca catattcgca atgtgaaaat ttatgagaat 840  
 ggcgatttta ttgaaacatc tcatttaaca aaggatggtt cgatcaacat tcaaggcgtg 900  
 atggaagaac tgcataagca ggattacgaa ggatatgtca gaccggatca tgggcgccat 960  
 ctttggggcg agcaatgccg cccgggatat ggcttatacg atcgggcact tggcatcatg 1020  
 tatttgaacg ggctgtggga cgcttatgaa gcaatggcaa aaaaagaggt gggcatatga 1080

<210> 64  
 <211> 837  
 <212> DNA  
 <213> Bacillus subtilis

<400> 64  
 atgatccgc tgcattgagaa cctggctggt aaaacggctg tcatcactgg cggcagcggc 60  
 gtgctttgct ctgcgatggc ccgggagcta gcccgctcat gcatgaaggt ggcgattttg 120  
 aatcggacgg ctgaaaaagg ccaagcggtc gtgaaggaga taacggcggc tggcggcaca 180  
 gcgtgcgctg ttgctgcgga tgtgctggac aggatgtcac tggagcgggc aaagggaagac 240  
 atccttggcc aatttggcgc tgttgatctg ttaattaacg gggctggcgg caatcatcct 300  
 gacgcgataa ccgatgtgga gacatatgaa gaagcgggag aaggccaatc cttttttgat 360  
 atggatgaga ggggctttct aactgtattc tccaccaatc tcaccggtgc gtttctggcc 420  
 tcgcaagtgt ttggtaaaga actgctgaag gcggattcac ccgcgatcat caacctttct 480  
 tccatgagtg cttattcacc tatgacgaag gttccggcat acagtgtgc gaaagcatcc 540  
 atcaataatt ttacgatgtg gatggctggt cattttgccg aaaccgggct gcgggtcaat 600  
 gcgattgccc caggcttctt tctgacaaaa caaaatcatg atctgctgat caaccaagac 660  
 ggaacgttca ccagccgatc tcacaaaatt attgcgggaa caccgatgaa gcgcttcgga 720  
 aaaccggagg atttgctcgg tacgctcctt tggctggcgg atgaatccta ttccggtttt 780  
 gtcactggga tcaccgttcc tgtcgatgga ggatttatgg cttattcagg tgtgtaa 837

<210> 65  
 <211> 1269  
 <212> DNA  
 <213> Bacillus subtilis

<400> 65  
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 tctgccacac aaattgggctt gatttttcagc agtttttcga taggttatgc catttttaat 180  
 tttcttgggg gcgtggcatc cgaccgctat ggggcaaacg tgacctgtt tgcgcgatg 240  
 gttgtttggt gcgtgttttag cggagcagtc gccctcgctt ttggctttgt cagcctgctg 300  
 attatacgca ttctcttcgg aatgggagaa ggcccgcttt cggcgaccat caacaagatg 360  
 gtgaacaact ggttcccgcg gaccagcgg gcgtccgcta tcggtgtaac caacagcggc 420  
 acgcccctcg ggggagccat ttccggcccg atagtcggca tgatcgagc ggcgttcagc 480  
 tggaaggtat ccttcggtct cattatgatt attggattga tatgggcagt gctctgggtc 540  
 aagtttgtca aagaaaagcc gcaagagacg atcaaggaag caccggcaat aaaagcagaa 600

acgtctcccg	gagaaaaaat	tccgctcacc	ttttacctga	agcaaaaaaac	agtcctgttc	660
acggcggttcg	cttttttctgc	ttacaactac	atcctcttct	tcttttttgac	atgggttccg	720
agctatcttg	tcgacgagcg	gggattaagt	ggtgaatcga	tgagtgtcat	cacggtcata	780
ccgtggattt	taggatttat	cgggctggct	gcgggggat	ttgtttctga	ctatgtgtac	840
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attcaagatg	tggttgatca	aaacaatgtc	ggttctgttg	gcggcttcat	gcatttcttc	1080
gccaacacgg	caggaattat	cggccccggt	ttaaccggat	ttattgttga	ccaaacaggc	1140
acgttttctg	gagcattttt	gcttgccggg	gggctggctg	tcttcgcttc	acttgcctgtg	1200
attcgttttg	tccgtccaat	cattggtaag	ccagcgggaa	cagaagctga	gaatcctgtg	1260
tcttattaa						1269

<210> 66  
 <211> 705  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 66						
gtgcgcatcg	gggggttttgg	gacaggacgt	atcgccgcgg	gcattgattt	cagcttgatc	60
cgcaaacacc	ctaaaatctt	ttgggggatac	agcgatatta	cgttttttaca	tactgccatt	120
catcaaaacà	caggtcttgt	cactttccat	ggcccgatgc	tcagcacgga	tattggcctt	180
gacgacgttc	acccgctgac	aaaagcgtca	tataagcagc	tcttcagga	gacggaattc	240
acctatacag	aagagctttc	tccgctgacc	gagcttgttc	ctggaaaagc	ggaaggcgag	300
cttgtcgggg	gaaatctgtc	tttgcctgacg	tctacactgg	gcacgccatt	tgaaattgat	360
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atgctgaatc	agctgaaaat	ggggggggaag	ctgacggacg	cggcggggaat	tctagtttgt	480
gattttcaca	attgtgtccc	ggtgaagcga	gagaagtctc	tctcgcttga	gcaggtgctg	540
gaagactata	ttatttctgc	gggcaggcct	gctctgagag	gattttaaata	cggccactgc	600
tcgccaagta	ttgcggttcc	gatcggtgctg	aaagctgcta	tgaatacagc	agaaaaaaca	660
gccgtaatag	aggcgggcgt	ttcagaaggg	gcgctgaaga	catga		705

<210> 67  
 <211> 1101  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 67						
atgaaaatca	ttcgaatcga	aacaagccga	atcgctgtcc	cgctgacaaa	gccgttttaa	60
accgcacttc	gcaactgtgta	tacggctgaa	tcagtcatag	taaggattac	ttatgacagc	120
ggtgcagtcg	gatggggaga	agcaccctccg	acgttagtga	ttacaggaga	cagcatggat	180
agcattgaaa	gtgccatcca	ccatgtgttg	aagccggcat	tgcttggaia	aagcctggcg	240
ggctatgagg	ccattctgca	cgacatccag	catcttctta	caggaaatat	gagcgcggaag	300
gctgctgtag	aaatggctct	atacgacggc	tgggcgcaga	tgtgcgggct	gccgctttat	360
caaatgcttg	gcggatatcg	agatacgctg	gaaacagatt	atactgtcag	tgtcaactca	420
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ataaaggctc	gaaaagatga	tattgcaaca	gatatcgccc	gtatccagga	aatcagaaaa	540
cgtgtcggat	cagctgtgaa	actgcgttta	gacgctaate	aggggtggag	gccgaaggaa	600
gcggtaaact	ccattcggaa	aatggaggat	gcgggcctag	gcattgagct	tgtcgagcag	660
cctgtccata	aagatgatct	cgctgggctt	aaaaagggtga	cagatgcaac	agatacgccg	720
attatggctg	atgaaagtgt	ttttacaccg	cgccaggcgt	tcgaagttct	gcaaaccctgg	780
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attaatgcca	tggcggaggc	ctgcgggggtg	gagtgtatgg	tcggcagcat	gatcgaaacg	900
aagctgggca	ttacggccgc	ggcgcatttt	gcggcaagca	agagaaacat	cacacgcttt	960
gattttgacg	cgccgctgat	gctgaaaaaca	gatgtattca	atggcgccat	aacatatagc	1020
ggcagcacga	tttcgatgcc	tggcaaacccg	ggcctcgga	tcatacggggc	tgcgcttttg	1080
aaaggggaaa	aagagcaatg	a				1101

<210> 68  
 <211> 891

<212> DNA  
 <213> Bacillus subtilis

<400> 68  
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 ccgtctgata aattcatgct tcaaccgact gtaatgatca gagactggct ggagcgcata 120  
 acgtatgatg aacggccttg attatgtaca gacaatgtaa tccaaactca gggtctcttt 180  
 ggcgaaaagg tacttgtgac ggcggaacag ggggaatggg tttctgtgat cgtgcctagc 240  
 cagccatccc gaaaggatcc gcgcggatac ccgggctgga tgaaaaagta ccagctggaa 300  
 aaaacaaagc ccatccatac acaacacgat gtgatgatca gcaaacctgc tgcctttttg 360  
 tacagaagca atggggaaaa ggagatcgaa ttaagctttt tgacagttct gcccttatt 420  
 gcaaaaagaa acggatatct taagggtttc accgtttttg gggaaaagggt tgtgaggcaa 480  
 agtgatgcag tgcctgtcag ccaacagaaa gggactgctg aagacatcat tcaaacgggt 540  
 gcgttttttc ttggccttcc ctacctgtgg ggagggatca gcgggttttg gtttgattgc 600  
 tccggattta tgtacagtat atttaaggcg aatggataca gcatcccccg tgatgcggga 660  
 gatcaggcta aggcaggga ggttgtccc cttgatgata tgaaagccgg tgatctgctg 720  
 ttttttgctt atgaggaagg aaaaggagcg attcatcacg tcggtctgta ttaggcggc 780  
 gggaaaatgc ttcattctcc aaagacaggg aagtcaatcg aaatcctcac attaacagag 840  
 acaatctatg aaaaagaatt atgtgcggtg cgccgctgtt tttcagaata a 891

<210> 69  
 <211> 984  
 <212> DNA  
 <213> Bacillus subtilis

<400> 69  
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 aagcggacag tcaaagctgt cgacggggct acctttcaga ttcgtgaagg agaaacgttc 120  
 gggctagtcg gggaaatcagg gtgcgggaaa tcaaccttgg ggagagtgt gatgcgcctt 180  
 tatcagccga cagaaggaag cgtgacatac cgccggcaca atcttcatgc actaagtga 240  
 aaagagcagt ttgccttcaa ccgcaaaactg cagatgattt ttcaggacct ttatgcttca 300  
 cttaacccgc gcatgaccgt tcgagaaatt attttggagc cgatggagat tcataatctc 360  
 tacaataccc ataaagcacg gctttccgtc gtggacgagc tgcttgaggc agttgggctt 420  
 caccgccgatt ttggcagccg ttatccgcat gaattcagcg gcgggcaaaag gcagagaatc 480  
 gggattgcca gagcactgtc gctgaatcct gaatttatcg tggcggacga accgatttct 540  
 gcacttgatg tctctgttca agcgcagggt gtcaacctgc tgaagcggct tcaaaaagag 600  
 aaagggctta cgtttttatt cattgcccac gatctttcga tggatgaagca tatcagtga 660  
 aggatcggtg ttatgtactt aggacacatg atggaaatta cagagagcgg caccttgat 720  
 cgtgaaccgc tccatcccta tacaaaggcg cttttgtcct cgattccgat tccagatcct 780  
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 ccgccaagcg gctgcgtgtt tcgtacccgc tgtccggagc gatgcctgaa tgtggagaat 900  
 ctcgtcccca gcttcaagaa atcgaacccg gccgttttgt cgcttgccat ttgtatcgaa 960  
 atgctgaaac gaaggaaaaa gtaa 984

<210> 70  
 <211> 1416  
 <212> DNA  
 <213> Bacillus subtilis

<400> 70  
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 gttccggaag agaaatggaa cgattggctt tggcagctga cacacactgt aagaacgtta 120  
 gatgatttaa agaaagtcat taatctgacc gaggatgaag aggaaggcgt cagaatttct 180  
 accaaaacga tccccttaa tattacacct tactatgctt ctttaattga ccccgacaat 240  
 ccgagatgcc cggtagcgtat gcagtctgtg ccgctttctg aagaaatgca caaaaacaaa 300  
 tacgatctgg aagaccgct tcatgaggat gaagattcac cggtagccgg tctgacacac 360  
 cgctatcccg accgtgtgct gtttcttctg acgaatcaat gttccatgta ctgccgctac 420  
 tgcacaagaa ggcgcttttc cggacaaatc ggaatggcg tccccaaaaa acagcttgat 480  
 gctgcaattg cttatatccg ggaaacaccc gaaatccgag attgtttaat ttcaggcgg 540  
 gatgggctgc tcatcaacga ccaaatttta gaatatattt taaaagagct gcgcagcatt 600

ccgcatctgg	aagtcacag	aatcggaaca	agagctcccg	tcgtctttcc	gcagcgcatt	660
accgatcatc	tgtgcgagat	attgaaaaaa	tatcatcccg	tctggctgaa	cacccatttt	720
aacacaagca	tcgaaatgac	agaagaatcc	gttgaggcat	gtgaaaagct	ggtgaacgcg	780
ggagtgccgg	tcgaaatca	ggctgtcgta	ttagcaggta	ttaatgattc	ggttccaatt	840
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tgtgatctgt	cagaaggaat	agggcatttc	agagctcctg	tttccaaagg	tttgagatc	960
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aaagtgatct	taagaaat	tgaagggtgtg	attacgtcat	atccggaacc	agagaattat	1140
atccccaatc	aggcagacgc	ctatttttgag	tccgttttcc	ctgaaaccgc	tgacaaaaag	1200
gagccgatcg	ggctgagtg	cattttttgt	gacaaagaag	tttcgtttac	acctgaaaa	1260
gtagacagaa	tcaaaaggag	agaggcatat	atcgcaaatc	cggagcatga	aacattaaaa	1320
gatcggcggtg	agaaaagaga	tcagctcaaa	gaaaagaat	ttttggcgca	gcagaaaaaa	1380
cagaaagaga	ctgaatgcgg	aggggattct	tcatga			1416

<210> 71  
 <211> 828  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 71						
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aaacgaatca	gagtggttcg	ttatgacgga	gccattgaga	aggccctgcc	ggatatcgtg	120
gcagcggcaa	aagaagagaa	tgcagaaaaa	atcattgtct	atgcgaagca	gcatgatgag	180
ccgatccttg	ccaacaatt	atgtgcgcg	gagggctatc	taaagggtta	ttatctcggc	240
cattcggctt	gtgtcatggt	acgttacctt	tcagaaaagg	ggagacaaac	agattcttat	300
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agtacacccg	tttttacgat	gagaaaagca	gaaacaaacg	acatgtacca	gctatcgatg	420
ctgtataaaa	aagtattccg	cacgtaccga	accccggtat	ttgacccgcg	ttatattgaa	480
aagacgatga	atgcaaatat	ggtgtattat	atcatgcttg	atcatgaccg	cctgatcagc	540
gcagcaagcg	cagaaatcaa	tccagagctt	gggcatgcag	aaataaccga	ttgcgctgtg	600
ctgccggaat	atcgcgccca	ttcgtaaca	agctttttta	tcgaggcggt	agaaaaagaa	660
atggctggag	aggatatcgt	tcattgtgtt	tctctcgccc	gtgcttcgtc	ttttgggatg	720
aatgctgtgt	tgtaccattc	aggttatcag	tatggcggaa	ggctgatcaa	taattgcttt	780
atagccgaag	gccttgaaaa	catgaatatt	tgggtgcaagc	aactgtaa		828

<210> 72  
 <211> 654  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 72						
atgggcttgg	gagtagcaga	aagagaacag	attgcaaaac	gcgctgctac	tgaaattaag	60
cagggcatga	ttgtgaatct	cggatatcgg	atcccttcc	tggtagcgaa	ctttttgaag	120
cctgacatgc	aggtcatgtt	tcaagcggaa	aacgggtgtc	ttggcattgg	agaaagtccc	180
gaaaaggag	aagaggatgc	gcatttatgc	aacgcccggg	gatatcctgt	ccgcgctgta	240
aaaggggctt	cttattttga	tacaaccatg	tctttttgca	tgatcagaaa	aggcaaaatt	300
gacattacga	tttttaggcg	cctgcagggtg	agccaatcag	gagatttggc	aaattggctt	360
gttccgggaa	aaaagggtgc	tggatatggc	ggggcgatgg	agcttgccca	aaaagcgaaa	420
aaagtgggtg	tcgtcatgag	tcatacagat	caaaagggaa	ggcctaaatt	aacagaaaga	480
tgtacgctgc	cattaactgc	tgcaggctgt	gtagatttga	ttattaccga	aaaagcgggt	540
cttgaggctg	atagccatca	cttcatttta	aaagagctga	tgaatggctc	gacaatcgat	600
gaggtgacga	ggctgacaga	agctgaaatc	aaaatagata	tgcttttttc	ttaa	654

<210> 73  
 <211> 690  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 73  
atggcgccat ttcaaaaagc aatcagcatt gacacagcaa ttgcagatgt tcgggatgga 60  
tcggttctga tgtttggcgg ttttggggga gtcgggtcgc ctccttcatt gattgaagcg 120  
atattggaca gcggtgtaac ggatttgact gtgatttgca atgacgccgg tttcccggat 180  
atcggaatcg gcccgttat tgttaatcaa cgggtcaaaa ccctgatcgc ctgcgatatc 240  
ggttccaatc cagtagccgg aaaacagatg acagagggga cgtagaggt tcaattttca 300  
cctcagggaa cgcttgcgga acggattcgc gccggcggag cggggcttgg cggattttta 360  
accgacgtgg gcattgataa tcaaatggtt tgcgaaaaaa aggacatcgt aacagtggcg 420  
ggaaaacgat acttgattga agaggcgctg actgctgatt ttgctttcat caatgcttac 480  
attgcagatg aattcggcaa tctaacgtat gacaaaaccg cgcgcaatat gaacccgctt 540  
atggcaatgg ccgccaggag aacctttgcc gaagctgagc gtatcgttcc gatgggggag 600  
atctctgaag aatgattgt cacaccggg gtttttgtt agggggttgt acgaagcgag 660  
ggagtgaagt ggaaatgggc ttgggagtag 690

<210> 74  
<211> 1335  
<212> DNA  
<213> *Bacillus subtilis*

<400> 74  
atgagcagtt atttgattaa gccagagctt agctcggcct atccggttgt cagttatgcg 60  
aagggttcat atgtttatga tcagaccgga aaaaaatata tcgacggctc gtcagggtcg 120  
gtgacatgta atatcgcca cggagtctgt gatgtgactg agaagctgaa agaacagctt 180  
gatcaggtgt cttttgctta ccgctcacag tttacgagtg agcccgcga gcaattagcc 240  
gctctcttgg cacaggagct gcccgagat gtgaattggt ctttttttgt caacagcgga 300  
tcagaagcga tagaaacagc tatgaaaatc gccattcagt attggcagga aaaaaagcaa 360  
acacaaaaat ccatcttttt gtctcgatgg agcagttacc acggaataac tttgggagcg 420  
ctttcattgt ctggttttta tgaaaggaga taccggttca cccatctcat tgagcgggtat 480  
ccagctatct cagctccaca tatttatcgg ctgaatcacg agacggaaga agactttggt 540  
cagactgcag ctgatgaact ggacaccatg attaaaagaa tcggaagcca attcatcgcc 600  
ggctttgttg ctgagcctat tattggtgct gcaggagcag cgattactcc gcctccggga 660  
tattatgaga gattaagtga ggtatgccgc acacacgatg tgctttttat tgcagatgaa 720  
gtgatgacgg ggcttgggag aacaggaagg atgctcgcga cagagcattg ggataccgta 780  
cctgatattg ctgtactggg gaagggactc ggtgcgggggt atgcacctat tgctgctgcc 840  
gtcgtatctg attctattat tgaaaccata aaacaaggggt caggtgtgat tatgagcgggt 900  
cacacatata gtgcacatcc ctattcagcc aaagctgctc ttgaagtttt gcgatatgtg 960  
ttaaagcacg gcttgatcaa acaatcagaa aaaaaggcg ctgtgctgaa gaagaagctt 1020  
gatgaggcgg catctcaaa cggcattata ggtgaggtgc gcggaaaagg actgctatta 1080  
ggcattgaat ttgtggcaga ccaaaaaacg aagaaagtgt ttccgccaga gcaggcgata 1140  
acccagctta ttgtcagcga ggcgaaaaaa cgcgggctga ttgtttatcc ttccaaagct 1200  
ggaatagaca gtggagaagg agatgctgtc attattgtct ctccttttac tatttcagac 1260  
ggtgaaatgg aagagcttat ctctattttt tcagaaacag ttgcagcgggt cgaaaaaaac 1320  
ttaaaaaagg attga 1335

<210> 75  
<211> 912  
<212> DNA  
<213> *Bacillus subtilis*

<400> 75  
gtgatcacia gagatttttt cttattttta tccaaaagcg gctttctcaa taaaatggcg 60  
aggaactggg gaagtcgggt agcagcgggt aaaattatcg gcgggaatga ctttaacagt 120  
tcaatcccga ccatcgaca gcttaacagc caaggcttgt cagtactgt cgatcattta 180  
ggcgagtttg tgaacagcg cgaggctgca cgggagcgtg cggaagagt cattcaaacc 240  
attcgacca tcgcggtaca ggagctgaac tcacacgttt ctttaaaaaat gacgtcttta 300  
ggtttggata tagatatgga tttggtgtat gaaaatatga caaaaatcct tcagacggcc 360  
gagaaacata aaatcatggt caccattgac atggaggacg aagtcagatg ccagaaaacg 420  
cttgatattt tcaaagattt cagaaagaaa tacgagcatg tgagcacagt gctgcaagcc 480  
tatctgtacc ggacggaaaa agacattgac gatttggatt ctttaaaccc gttccttcgc 540  
cttgtaaaag gagcttataa agaatacagaa aaagtagctt tcccggagaa aagcgatgtc 600

gatgaaaatt	acaaaaaaat	catccgaaaag	cagctcttaa	acgggtcacta	tacagcgatt	660
gccacacatg	acgacaaaat	gatcgacttt	acaaagcagc	ttgccaagga	acatggcatt	720
gccaatgaca	agtttgaaat	tcagatgctg	tacggcatgc	ggtcgcaaac	ccagctcagc	780
ctcgtaaaag	aagggtataa	catgagagtc	tacctgccat	acggcgagga	ttggtacggc	840
tactttatga	gacgccttgc	agaacgtccg	tcaaacattg	catttgcttt	caaaggaatg	900
acaaagaagt	aa					912

<210> 76  
 <211> 1548  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 76						
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gcgttttaaaa	aagcgcttgc	gacagtaagc	gaatattttag	gaaaagacta	tccgcttgtc	120
attaacggcg	agagagtggg	aacggaagcg	aaaatcgttt	caatcaaccc	agctgataaa	180
gaagaagtcg	tcggccgagc	gtcaaaaagcg	tctcaagagc	acgctgagca	agcgattcaa	240
gcggtcgcaa	aagcatttga	agagtggaga	tacacgtctc	ctgaagagag	agcggtgtgc	300
ctgttccgcg	ctgctgcca	agtccgcaga	agaaaacatg	aattctcagc	tttgcttgtg	360
aaagaagcag	gaaagccttg	gaacgagggc	gatgccgata	cggctgaagc	gattgacttc	420
atggagtatt	atgcacgcca	aatgatcgaa	ctggcaaaaag	gcaaaccggg	caacagccgt	480
gaaggcgaga	aaaaccaata	tgtatacacg	ccgactggag	tgacagtcgt	tatcccgcct	540
tggaaacttct	tgtttgcat	catggcaggc	acaacagtgg	cgccgatcgt	tactggaaac	600
acagtgggtc	tgaaacctgc	gagtgtctaca	cctgttattg	cagcaaaatt	tgttgagggtg	660
cttgaagagt	ccggaattgcc	aaaaggcgta	gtcaactttg	ttccgggaag	cggatcggaa	720
gtaggcgact	atcttgttga	ccatccgaaa	acaagcctta	tcacatttac	gggatcaaga	780
gaagtgggta	cgagaatttt	cgaacgcgcg	gcgaagggtc	agccggggcca	gcagcattta	840
aagcgtgtca	tcgctgaaat	gggcggtaaa	gatacgggtg	ttgttgatga	ggatgcggac	900
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tctgcagggt	cacgtgcagt	agttcatgaa	aaagtgtatg	atcaagtatt	agagcgtgtc	1020
attgaaatta	cggaatcaaa	agtaacagct	aaacctgaca	gtgcagatgt	ttatatggga	1080
cctgtcattg	accaagggtc	ttatgataaa	attatgagct	atattgagat	cggaaaacag	1140
gaagggcggt	tagtaagcgg	cgggtactgg	gatgattcga	aaggatactt	catcaaaccg	1200
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gtcgttgcac	tttgtaaagt	gtcagacttt	gatgaagcct	tagaagtggc	aaacaatact	1320
gaatatgggt	tgacagggcg	ggttatcaca	aacaaccgca	agcacatcga	gcgtgcgaaa	1380
caggaattcc	atgtcggaag	cctatacttc	aaccgcaact	gtacaggtgc	tatcgtcggc	1440
taccatccgt	ttggcgggct	caaaatgtcg	ggaacggatt	caaaagcagg	cgggcccggat	1500
tacttggtc	tgcatatgca	agcaaaaaaca	atcagtgaag	tgttctaa		1548

<210> 77  
 <211> 1398  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 77						
atggagtctt	ttttcaatag	tttgattaat	attccaagtg	atttcattctg	gaaataccta	60
ttttatatatt	taataggggt	tggattattt	tttaccatac	gttttggttt	tatccaattc	120
cgttattttta	ttgaaatggt	cagaatagta	ggggagaagc	cggaaggaaa	taaagggtgtt	180
tcattctatgc	aggcattctt	tatttcggcc	gcatcccagc	tcggcacagg	gaatttgact	240
gggtgtagcct	tagcaattgc	gacagggcga	ccaggcgctg	tattttggat	gtgggtagtg	300
gctgcagtag	gcatggcttc	aagctttgtc	gaaagtacat	tagcacagct	ttataaggta	360
agagacgggg	aggatttccg	cggagggccg	gcctactata	ttcaaaaggg	tcttgggtgcc	420
agatggcttg	gcacgtttt	tgcaatctta	attaccgtct	cattcggctt	gatttttaac	480
gctgttcaaa	caaatataat	tgctggagca	ttggatggcg	cattccatgt	aaataaaata	540
ggtgtagcca	tagttctggc	ggtttttaact	gcgtttatca	ttttcggcgg	tttaaaacgt	600
ggtgtcgctg	tttcacagct	aattgtgccg	ggttatggcag	gcatttatat	tcttatcgct	660
ttatttgggt	tcattcacgaa	tattacggct	ttccctggcg	ttatcgctac	aattgttaaa	720
aatgcttttag	gttttgaaca	agtcgtcggc	ggcggaatag	gcggcatcat	cgttatcggg	780
gcgcaacgcg	gacttttttc	aaacgaagca	ggaatgggga	gcgcacccaa	cgcgggtgcg	840



acggctcatg	tatcccatcc	ggcaaagcaa	ggctttatcc	aaacattagg	cgtatTTTTc	900
gatacatTTa	tcatatgtac	gtccacagca	tttattattt	tgctgtacag	tgtaacgcca	960
aaaggcgacg	gcatccaagt	cacacaggct	gctcttaacc	atcacattgg	aggctgggcg	1020
ccgactttca	tcgcagtcgc	aatgttcttg	tttgattcca	gttcagttgt	cggcaactat	1080
tattatggcg	agacaaacat	tgaatttatt	aaaacaagca	aaacatggct	gaacatttac	1140
cgtatcgctg	ttattgctat	ggttgtgtat	ggatctttat	caggcttcca	aatcgtttgg	1200
gatatggcgg	acctctttat	gggtatcatg	gcgctgatca	acttaattgt	gattgcgctg	1260
ctgtcaaacg	ttgcttataa	agtgtataaa	gattacgcga	aacagcgtaa	gcaaggactt	1320
gatcctgtgt	ttaaagcgaa	aaacatccca	gggctgaaaa	acgctgaaac	atgggaagat	1380
gagaaacaag	aagcataa					1398

<210> 78  
 <211> 675  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 78						
atgaacacga	ttgattggga	attcatgata	tcagcgttcc	cgactttaat	tcaggccctt	60
ccgatcacct	tgtttatggc	aatagcagct	atgatttttg	ccattatcgg	aggacttatt	120
ctcgactca	ttacaaaaaa	caaaattcca	gtgcttcac	agctgtcaaa	gctgtatata	180
tcctttttcc	gaggcgTgc	gacacttgta	cagctgttct	taatctatta	cgggctgccg	240
cagctatttc	cagagatgag	caaaatgaca	gctctcacag	ctgccatcat	cgggttaagc	300
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gggcagctgg	aggcgTgcct	gtctgtcggt	atgacaaaat	ttcaggcata	cagacggatt	420
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ctgaaagaaa	cgTcactggc	ctttacatta	ggggTcatgg	agatgttcgc	ccaagggaa	540
atgtacgctt	caggaaacct	caaatatttt	gagacgtatt	tggcggttgc	gatcgtctat	600
tgggttctta	ccattatcta	cagcattttg	caggacttgt	ttgaacgtgc	catgagcaag	660
ccataccgga	cttag					675

<210> 79  
 <211> 795  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 79						
atgaagatga	aaaaatggac	agtgcTggTc	gTtgctgcat	tattagcggt	gctctcagct	60
tgccgcaatg	gaaacagcag	cagtaaagag	gatgacaatg	tgcttcatgt	cggTgcgaca	120
ggacaaagtt	acccatttgc	ttataaagaa	aacggaaagc	tgacaggctt	tgacgtggaa	180
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agcgggctga	tgggagagct	tcaaacaggc	aagcttgaca	ccatttccaa	ccaggtagct	300
gtgacagacg	aacgtaagga	aacgtataac	tttacgaaac	catagcctta	tgccgggaaca	360
cagattgtcg	tcaaaaaaga	caatacagac	atcaaatcag	tagacgattt	aaaaggcaag	420
acagTcgca	ccgttctcgg	ttcaaaccac	gcgaaaaacc	ttgaaagcaa	agatcctgat	480
aaaaaaatca	atatcaaaac	gtacgaaaca	caagagggtg	cgctgaagga	tgTtgcgTac	540
ggccgTgtag	acgcttatgt	caacagccga	actgtattga	tcgcgcaa	caagaagacc	600
ggTttgccat	taaagcttgc	aggagatccg	attgtttacg	aacaggTtgc	attcccattt	660
gccaaaggacg	atgcgcacga	caagctccgc	aaaaaagtca	ataaggccct	agatgaattg	720
cgtaaagacg	gaacactgaa	aaaactctct	gaaaaatact	ttaatgaaga	tatcacagta	780
gaacagaagc	attaa					795

<210> 80  
 <211> 498  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 80						
atgaagccac	gataccgcct	tgcaTttgaa	cgtgatgcgg	aacagcttct	cgagctgaca	60
ttgcgggctt	atgaaccgat	tcgaaagctc	ggcattcggt	ttgctgctgc	tcatgcggat	120
ttggatttgg	tgctgaaaaa	tattcgggaa	aatgcttTgt	acgtcatgga	agaagacggg	180

cggatcatcg	cgaccatcac	cttgagaatg	ccttggggaa	aacagccggg	accgtatggc	240
gttccgcata	tctggtggtt	tgctgtggac	cccgacaccg	gtaaaaaagg	aatcgggtaca	300
aagctgcttc	aatggctgga	ggaaacaatc	cctcgcgata	cgttaaagg	tccgtttggt	360
tactcggaa	cagcggataa	gcatccgtgg	ctgattgaga	tgtacgaacg	aaaaggatat	420
gtccgctcag	gtgaacaaga	ccttggaaaa	gggcatatca	cagtctatat	gaaaaaacia	480
ttgggacatg	atctataa					498

<210> 81  
 <211> 1326  
 <212> DNA  
 <213> *Bacillus subtilis*

<400> 81						
atgacaagca	aaaagaaaca	aatcaaatta	ggggatatttt	tagcaggtac	aggccatcat	60
gttgcgtctt	ggcggcacc	ggacgcgccg	tcagatgcga	gcatgaattt	ggattatttt	120
aaagagcttg	cgaaaaacagc	ggagcgaggc	aagctggata	tgctgttttt	agcggacagc	180
ctttcaattg	acagcaaata	acatccaaat	gtattaacaa	ggtttgagcc	attcaccctg	240
ctctctgctt	tggcgcaggt	cacatcaaaa	atcggactga	cagcaacagc	ctccactaca	300
tacagcgagc	cattccatat	tgccagacag	tttgcgtcat	tggatcatct	gtccaatggc	360
cgtgccggat	ggaacgtcgt	cacttcattc	attgaatcaa	cagcgctgaa	tttcagcgg	420
gaaaagcacc	ttgaacacca	tttgcgctat	cagcgggcag	aggaatttgt	cgagattgta	480
aaggggcttt	gggattcatg	ggaagaggac	gcctttatcc	gtaataaaga	aacgggtgaa	540
ttctttgaca	aagaaaaaat	gcatgagctg	aaccacaaag	gagaatattt	ctcggttcgc	600
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cgtgatccag	aaaaaattgc	cattatgccg	ggtattttcc	caatcattgc	cgatacagaa	840
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ctgccgaagc	ttgacgccga	agcttccaat	gcgggtgaaga	gccgcttcaa	gcttggttcag	1020
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agaggccacc	atatcttctg	cggcacgccg	gagcagctcg	ccgacaagat	gcaggaatgg	1140
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gaagtgtttg	ttgatcaagt	ggttccgatt	ttacaggagc	gcggcgtggt	cagaaaagaa	1260
tatgaaggca	caacattacg	agagcacttc	ggtttggaaa	agccggtaaa	ccgctatgca	1320
aagtaa						1326